

LISTING OF CLAIMS

Please replace all previous versions, and listings, of claims in the present application with the following listing of claims.

1. (Currently Amended) A power supply circuit comprising:

~~a main transistor~~ an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit ~~configured to detect~~ detecting a ~~detected~~ voltage in response to ~~an~~ the output voltage supplied through the output terminal;

a reference-voltage producing circuit ~~configured to~~ producing a reference voltage in accordance with a target voltage;

a voltage control circuit ~~configured to control~~ controlling the ~~main transistor~~ electric switching element so that the detected output voltage tracks ~~is consistent with~~ the reference voltage;

a current detecting circuit ~~configured to detect~~ detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit ~~configured to set~~ setting a limited value ~~of~~ to the output current, ~~so that wherein~~ the limited value increases gradually ~~in cases where~~ over time during a rise of the output voltage ~~is made to rise~~ up to the target voltage; and

a current limiting circuit ~~configured to control~~ controlling the ~~main transistor~~ electric switching element ~~so that to keep~~ the detected output current keeps at a current value less than or equal to the limited value ~~in cases where~~ during the rise of the output voltage ~~is made to rise~~ up to the target voltage, the current limiting control having priority over an output voltage tracking control.

2. (Currently Amended) The power supply circuit according to claim 1, wherein the limited-current-value setting circuit is configured to stepwise increase the limited value ~~with an elapse in~~ as time progresses ~~during a rise of the output voltage~~.

3. (Currently Amended) The power supply circuit according to claim 2, wherein the limited-current-value setting circuit is configured to stepwise increase the limited value by a predetermined amount at given intervals of time ~~during the rise of the output voltage~~.

4. (Currently Amended) The power supply circuit according to claim 2, wherein the limited-current-value setting circuit is provided with a timer circuit counting a predetermined period of time and a limited-value increasing circuit increasing the limited value by the predetermined amount each time ~~when~~ the timer circuit finishes counting the predetermined period of time.

5. (Currently Amended) The power supply circuit according to claim 2, ~~wherein the power supply circuit~~ which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the ~~main transistor~~ electric switching element being placed in the current supply path.

6. (Withdrawn) The power supply circuit according to claim 1, wherein the limited-current-value setting circuit is configured to continuously increase the limited value with an elapse in time during a rise of the output voltage.

7. (Withdrawn) The power supply circuit according to claim 6, wherein the power supply circuit is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the main transistor being placed in the current supply path.

8. (Currently Amended) The power supply circuit according to claim 1, ~~wherein the power supply circuit~~ which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the ~~main transistor~~ electric switching element being placed in the current supply path.

9. (Currently Amended) The power supply circuit according to claim 1, further comprising a delay control circuit ~~configured to output~~ outputting a rise start signal after a delay time from an application of the input voltage to the input terminal ~~at a time when a ringing component of an input voltage that has been applied to the input terminal is reduced,~~

wherein the limited-current-value setting circuit is configured to set start setting the limited value ~~of the output current so that the limited value increases gradually,~~ in response to the outputted rise start signal; ~~and~~

~~the current limiting circuit configured to control the main transistor so that the output current keeps the limited value, on the basis of the output current detected by the current detecting circuit and the limited value set by the limited current value setting circuit.~~

10. (Currently Amended) The power supply circuit according to claim 9, wherein the ~~time when the delay control circuit outputs the rise start signal is designated as a time when a predetermined period of time elapses after the application of the input voltage to the input terminal~~ the delay time is set to a period of time during which a ringing component of the input voltage is reduced below a predetermined level.

11. (Currently Amended) The power supply circuit according to claim 10, wherein the delay control circuit is provided with a charge circuit operating with the input voltage applied and providing a charge voltage based on the input voltage and a comparison circuit drawing a comparison between the charge voltage and a given threshold ~~so as to output~~ and outputting the rise start signal when the charge voltage becomes equal to the given threshold.

12. (Withdrawn) The power supply circuit according to claim 10, wherein the delay control circuit is provided with an oscillation circuit outputting a reference clock signal and a timer circuit operating using the reference clock signal to output the rise start signal when the predetermined period of time elapses after the application of the input voltage to the input terminal.

13. (Currently Amended) The power supply circuit according to claim 10, further comprising a shutoff circuit configured to control the electric switching element ~~main transistor~~ in an off-state thereof until the rise start signal is outputted.

14. (Currently Amended) The power supply circuit according to claim 10, ~~wherein the power supply circuit~~ which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element ~~main transistor~~ being placed in the current supply path.

15. (Withdrawn) The power supply circuit according to claim 9, wherein the delay control circuit is provided with a comparison circuit drawing a comparison between the applied input voltage and a given threshold so as to output a comparison signal and a constant-level detecting circuit outputting the rise start signal on condition that the comparison signal is kept at the same level for a given interval of time.

16. (Currently Amended) The power supply circuit according to claim 9, further comprising a shutoff circuit configured to control the electric switching element ~~main transistor~~ in an off-state thereof until the rise start signal is outputted.

17. (Currently Amended) The power supply circuit according to claim 9, ~~wherein the power supply circuit~~ which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element ~~main transistor~~ being placed in the current supply path.

18. (Currently Amended) The power supply circuit according to claim 9, further comprising a shutoff circuit configured to control the electric switching element ~~main transistor~~ in an off-state thereof until the rise start signal is outputted.

19. (Cancelled)

20. (New) The power supply circuit according to claim 1, wherein the electric switching element is a transistor element.

21. (New) The power supply circuit according to claim 1, further comprising first and second smoothing circuits connected to the first and second terminals, respectively, and configured to smoothen the input and output voltages, respectively, wherein at least the voltage detecting circuit, the reference-voltage producing circuit, the voltage control circuit, the limited-current-value setting circuit, and the current limiting circuit are formed into an integrated circuit.

22. (New) A power supply circuit comprising:
an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;
a voltage detecting circuit detecting the output voltage supplied through the output terminal;
a voltage control circuit controlling the electric switching element so that the detected output voltage tracks a reference voltage to be targeted;
a current detecting circuit detecting an output current supplied through the output terminal to the load;
a limited-current-value setting circuit setting a limited value to the output current when a predetermined delay time has passed from an application of the input voltage to the input terminal, wherein the limited value increases gradually with a progress in time during a rise of the output voltage up to the target voltage; and
a current limiting circuit controlling the switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over an output voltage tracking control.

23. (New) The power supply circuit according to claim 22, further comprising a delay control circuit providing the limited-current-value setting circuit with the predetermined delay time.

24. (New) The power supply circuit according to claim 23, wherein the delay time is set to a period of time during which a ringing component of the input voltage is reduced below a predetermined level.

25. (New) The power supply circuit according to claim 24, wherein the delay control circuit is provided with a charge circuit operating with the input voltage applied and providing a charge voltage based on the input voltage and a comparison circuit drawing a comparison between the charge voltage and a given threshold and outputting the rise start signal when the charge voltage becomes equal to the given threshold.

26. (New) The power supply circuit according to claim 22, wherein the electric switching element is a transistor element.

27. (New) The power supply circuit according to claim 22, further comprising first and second smoothing circuits connected to the first and second terminals, respectively, and configured to smoothen the input and output voltages, respectively.

28. (New) The power supply circuit according to claim 22, wherein at least the voltage detecting circuit, the voltage control circuit, the limited-current-value setting circuit, and the current limiting circuit are formed into an integrated circuit.